ID TECH
10721 Walker Street
Cypress, California 90630
(714) 761-6368
www.id-tech.net

80030501-005 Rev. A R02/05 #422

MINIMAG™
Magnetic Stripe Reader

TTL

User's Manual

IDTECH®
Value through Innovation

MINIMAG™
Magnetic Stripe Reader

TTL

User's Manual

ID TECH
10721 Walker Street
Cypress, California 90630
(714) 761-6368
www.id-tech.net

80030501-005 Rev. A R02/05 #422

IDTECH®
Value through Innovation

Agency Approved

Specifications for subpart B of part 15 of FCC rule for a Class A computing device.

Limited Warranty

ID TECH warrants this product to be in good working order for a period of one year from the date of purchase. If this product is not in good working order as warranted above, or should this product fail to be in good working order at any time during the warranty period, repair or replacement shall be provided by ID TECH.

This warranty does not cover incidental or consequential damages incurred by consumer misuse, or modification of said product. For limited warranty service during the warranty period, please contact ID TECH to obtain an RMA number and instructions for returning the product.

©2005 International Technologies & Systems Corporation. The information contained herein is provided to the user as a convenience. While every effort has been made to ensure accuracy, ID TECH is not responsible for damages that might occur because of errors or omissions, including any loss of profit or other commercial damage. The specifications described herein were current at the time of publication, but are subject to change at any time without prior notice.

ID TECH is a registered trademark of International Technologies & Systems Corporation. MiniMag and Value through Innovation are trademarks of International Technologies & Systems Corporation.

OPERATION

Make sure the reader is properly cabled and is receiving sufficient power. To read a card, slide the card, in either direction, through the reader slot, with the magnetic stripe facing the magnetic head.

ELECTRICAL CHARACTERISTICS

DC Electrical Characteristics (25° C)						
Item	Symbol	Min.	Typical	Maximum	Unit	Condition
Supply Voltage	V_{CC}	2.6		5.5	V	
Maximum Active Supply Current	I_{CC}			1.1 per track + I_{MDL}	mA	$I_{MDL}=(V_{CC} - V_{OL})/10K$
Maximum Sleep Current	I_{SLEEP}			30 per track + I_{MDH}	µA	$I_{MDH}=(V_{CC} - V_{OH})/10K$
Minimum High Level Voltage	V_{OH}		V_{CC}-0.03		V	I_{OUT}=50µA
			2.3		V	I_{OUT}=3mA, V_{CC}=2.6V
			5.25		V	I_{OUT}=6mA, V_{CC}=5.5V
Maximum Low Level Voltage	V_{OL}		0.1		V	I_{OUT}=50µA
			0.22		V	I_{OUT}=3mA, V_{CC}=2.6V
			0.2		V	I_{OUT}=6mA, V_{CC}=5.5V

Agency Approved

Specifications for subpart B of part 15 of FCC rule for a Class A computing device.

Limited Warranty

ID TECH warrants this product to be in good working order for a period of one year from the date of purchase. If this product is not in good working order as warranted above, or should this product fail to be in good working order at any time during the warranty period, repair or replacement shall be provided by ID TECH.

This warranty does not cover incidental or consequential damages incurred by consumer misuse, or modification of said product. For limited warranty service during the warranty period, please contact ID TECH to obtain an RMA number and instructions for returning the product.

©2005 International Technologies & Systems Corporation. The information contained herein is provided to the user as a convenience. While every effort has been made to ensure accuracy, ID TECH is not responsible for damages that might occur because of errors or omissions, including any loss of profit or other commercial damage. The specifications described herein were current at the time of publication, but are subject to change at any time without prior notice.

ID TECH is a registered trademark of International Technologies & Systems Corporation. MiniMag and Value through Innovation are trademarks of International Technologies & Systems Corporation.

1

OPERATION

Make sure the reader is properly cabled and is receiving sufficient power. To read a card, slide the card, in either direction, through the reader slot, with the magnetic stripe facing the magnetic head.

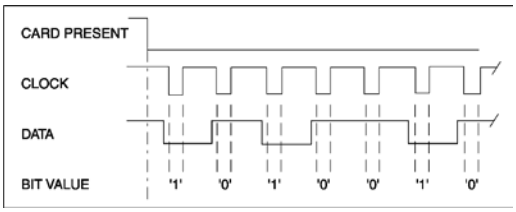
ELECTRICAL CHARACTERISTICS

DC Electrical Characteristics (25° C)						
Item	Symbol	Min.	Typical	Maximum	Unit	Condition
Supply Voltage	V_{CC}	2.6		5.5	V	
Maximum Active Supply Current	I_{CC}			1.1 per track + I_{MDL}	mA	$I_{MDL}=(V_{CC} - V_{OL})/10K$
Maximum Sleep Current	I_{SLEEP}			30 per track + I_{MDH}	µA	$I_{MDH}=(V_{CC} - V_{OH})/10K$
Minimum High Level Voltage	V_{OH}		V_{CC}-0.03		V	I_{OUT}=50µA
			2.3		V	I_{OUT}=3mA, V_{CC}=2.6V
			5.25		V	I_{OUT}=6mA, V_{CC}=5.5V
Maximum Low Level Voltage	V_{OL}		0.1		V	I_{OUT}=50µA
			0.22		V	I_{OUT}=3mA, V_{CC}=2.6V
			0.2		V	I_{OUT}=6mA, V_{CC}=5.5V

6

DATA, CLOCK AND CARD PRESENT SIGNALS

The following is a timing diagram of typical DATA and CLOCK signals from ID TECH electronics:



CLOCK: The CLOCK output is narrow pulse normally high, and goes low when data is valid. The data level is stable at both the rising and falling edges of the CLOCK pulse. CLOCK pulse width is typically 32 microseconds.

CARD PRESENT: The CARD PRESENT signal indicates data is being read from the media being passed through the slot. It will not switch until flux reversals (magnetic pulses) have been detected. After the flux reversals have been detected, CARD PRESENT goes low. It stays low throughout the reading process and for 5 to 10 milliseconds, after the last flux reversal is read. Typically, CARD PRESENT is used to signal the start and finish of a card read. It may also be used as an interrupt signal for alerting the firmware that the reading operation is in process.

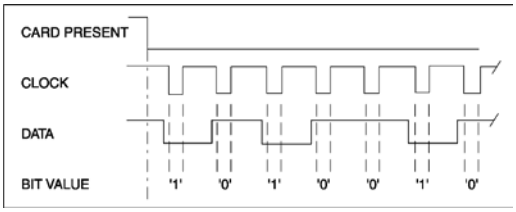
DATA: The DATA output level indicates the value of the bit being decoded during a CLOCK pulse. It is a low level for ones (1) and a high level for zeros (0). The DATA signal's level is steady at the rising and falling edges and during the low level of the CLOCK pulse.

SPECIFICATIONS

Operating Temperature:	32° F to 131° F (0° C to 55° C).
Storage Temperature:	-22° F to 158° F (-30° C to 70° C).
Humidity:	Maximum 95% non-condensing.
MTBF:	Read electronics, 21,000,000 POH.
Magnetic Head Life:	1,000,000 passes minimum.
Rail and Cover Life:	1,000,000 passes minimum.
Read Rate:	Less than one error in 100,000 bits on cards conforming to ISO7811 1-5 (not induced by operator error).
Swipe Speed:	3 to 60 inches per second, bi-directional.
Card Thickness:	.01 to .045 inches.
Slot Width:	.050 inches (1.37mm).
Dimensions:	Length: 3.54 inches (90mm). Width: 1.34 inches (34mm). Height: 1.10 inches (28mm).
Weight:	4.6 oz.
Cable Length:	6-foot straight cable.

DATA, CLOCK AND CARD PRESENT SIGNALS

The following is a timing diagram of typical DATA and CLOCK signals from ID TECH electronics:



CLOCK: The CLOCK output is narrow pulse normally high, and goes low when data is valid. The data level is stable at both the rising and falling edges of the CLOCK pulse. CLOCK pulse width is typically 32 microseconds.

CARD PRESENT: The CARD PRESENT signal indicates data is being read from the media being passed through the slot. It will not switch until flux reversals (magnetic pulses) have been detected. After the flux reversals have been detected, CARD PRESENT goes low. It stays low throughout the reading process and for 5 to 10 milliseconds, after the last flux reversal is read. Typically, CARD PRESENT is used to signal the start and finish of a card read. It may also be used as an interrupt signal for alerting the firmware that the reading operation is in process.

DATA: The DATA output level indicates the value of the bit being decoded during a CLOCK pulse. It is a low level for ones (1) and a high level for zeros (0). The DATA signal's level is steady at the rising and falling edges and during the low level of the CLOCK pulse.

5

SPECIFICATIONS

Operating Temperature:	32° F to 131° F (0° C to 55° C).
Storage Temperature:	-22° F to 158° F (-30° C to 70° C).
Humidity:	Maximum 95% non-condensing.
MTBF:	Read electronics, 21,000,000 POH.
Magnetic Head Life:	1,000,000 passes minimum.
Rail and Cover Life:	1,000,000 passes minimum.
Read Rate:	Less than one error in 100,000 bits on cards conforming to ISO7811 1-5 (not induced by operator error).
Swipe Speed:	3 to 60 inches per second, bi-directional.
Card Thickness:	.01 to .045 inches.
Slot Width:	.050 inches (1.37mm).
Dimensions:	Length: 3.54 inches (90mm). Width: 1.34 inches (34mm). Height: 1.10 inches (28mm).
Weight:	4.6 oz.
Cable Length:	6-foot straight cable.

2

DESCRIPTION

The MiniMag™ compact magnetic stripe reader can read 1, 2, or 3 tracks of magnetic stripe information. Power, when the MiniMag is connected to the host via a decoder box, is obtained from the decoder box. Operating current is 4mA maximum for a 3-track configuration.

The electronics are based on ASIC technology designed for use with magnetic stripe cards encoded with F2F, ANSI, and ISO-conforming data. The MiniMag reliably processes data encoded within ANSI and ISO standards, on both high and low coercivity magnetic media. The circuit is designed to read cards demagnetized down to 30% or 40% of ISO and ANSI signal levels, on tracks 1/3 or 2 respectively. These reading characteristics are designed to insure that the MiniMag will reliably read 'real world' cards.

In order to insure reliable reading under varying conditions, the MiniMag will reliably read magnetic media at speeds from 3 inches per second (IPS) to 60 IPS with typical accelerations. The output signals consist of a DATA and CLOCK for each encoded track. The electronics operate from 2.6VDC to 5.5VDC.

A CARD PRESENT signal is provided to alert the host when magnetic media is passed through the reader. It is activated after magnetic pulses have been detected and stays valid until after the last pulse is read. Media may be read bi-directionally without any pre-conditioning of the electronics, although the host system must employ enough data storage to ensure it can properly recognize the decoded bit sequence.

HOST CONNECTIONS

The undecoded MiniMag reader is connected to a decoder box using a 9-pin squeeze-to-release connector. Pinout designations are as follows:

PIN	COLOR	SIGNAL
1	BLUE	CLK1
2	BROWN	DATA1
3	GRAY	CLK3
4	YELLOW	DATA2
5	GREEN	CLK2
6	ORANGE	DATA3
7	BLACK	GND
8	WHITE	CARD PRESENT
9	RED	VCC

DESCRIPTION

The MiniMag™ compact magnetic stripe reader can read 1, 2, or 3 tracks of magnetic stripe information. Power, when the MiniMag is connected to the host via a decoder box, is obtained from the decoder box. Operating current is 4mA maximum for a 3-track configuration.

The electronics are based on ASIC technology designed for use with magnetic stripe cards encoded with F2F, ANSI, and ISO-conforming data. The MiniMag reliably processes data encoded within ANSI and ISO standards, on both high and low coercivity magnetic media. The circuit is designed to read cards demagnetized down to 30% or 40% of ISO and ANSI signal levels, on tracks 1/3 or 2 respectively. These reading characteristics are designed to insure that the MiniMag will reliably read 'real world' cards.

In order to insure reliable reading under varying conditions, the MiniMag will reliably read magnetic media at speeds from 3 inches per second (IPS) to 60 IPS with typical accelerations. The output signals consist of a DATA and CLOCK for each encoded track. The electronics operate from 2.6VDC to 5.5VDC.

A CARD PRESENT signal is provided to alert the host when magnetic media is passed through the reader. It is activated after magnetic pulses have been detected and stays valid until after the last pulse is read. Media may be read bi-directionally without any pre-conditioning of the electronics, although the host system must employ enough data storage to ensure it can properly recognize the decoded bit sequence.

3

HOST CONNECTIONS

The undecoded MiniMag reader is connected to a decoder box using a 9-pin squeeze-to-release connector. Pinout designations are as follows:

PIN	COLOR	SIGNAL
1	BLUE	CLK1
2	BROWN	DATA1
3	GRAY	CLK3
4	YELLOW	DATA2
5	GREEN	CLK2
6	ORANGE	DATA3
7	BLACK	GND
8	WHITE	CARD PRESENT
9	RED	VCC

4